

# COOLING APPARATUS FOR THE EXTERNAL CONNECTING DUCTS OF ENGINE OIL

## BACKGROUND OF THE INVENTION

### 5 1. Field of the invention

This invention relates to a cooling apparatus for the external connecting ducts of engine oil, particularly to one provided with a metal tubular body to guide machine oil to flow therethrough, and then the metal  
10 tubular body and the machine oil inside are cooled by the forceful wind of an engine fan, able to lower the temperature of the machine oil therein.

### 2. Description of the Prior Art

As commonly known, machine oil is employed to  
15 adhere to the surfaces of machine parts. If the temperature of the machine oil is excessively high, the viscosity of the machine oil will be lowered, thus not only resulting in wear to the machine parts but also causing damage to an engine (A) due to excessively high  
20 temperature produced by friction between the machine parts. Therefore, machine oil has to be maintained at a proper temperature so as to enable the engine (A) to operate normally.

A conventional crankcase 1, as shown in Figs. 1  
25 and 2, includes a housing (A1), a cover (A2) covered on the housing (A1) and a detecting hole 10 in the lower side. The structure of the conventional crankcase 1 only

lays stress on the circulatory lubrication of machine oil, but pays no attention to cooling of machine oil inside. The conventional crankcase 1 has its shell cooled by external air, but the machine parts rotating inside the crankcase 1 cannot get their heat dispersed. Therefore, additionally installing a cooling apparatus for machine oil is a most direct method to enhance lubrication effect between machine parts and prolong their service life. A water-cooling apparatus has been developed for foresaid purpose, but it may cost much expense to additionally install such a water-cooling apparatus and also may spoil the integral combination of the engine (A).

#### SUMMARY OF THE INVENTION

The objective of the invention is to offer a cooling apparatus for the external connecting ducts of engine oil, able to lower the temperature of the machine oil in a crankcase and prolong the service life of machine parts in the crankcase.

#### BRIEF DESCRIPTION OF DRAWINGS

This invention will be better understood by referring to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a conventional engine:

Fig. 2 is a perspective and cross-sectional view of the conventional engine:

Fig. 3 is an exploded perspective view of a cooling apparatus for the external connecting ducts of engine oil

in the present invention:

Fig. 4 is a perspective and cross-sectional view of the cooling apparatus for the external connecting ducts of engine oil in the present invention: and

5 Fig. 5 is a perspective and cross-sectional view of the cooling apparatus for the external connecting ducts of engine oil in a using condition in the present invention.

## 10 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of a cooling apparatus for the external connecting ducts of engine oil in the present invention, as shown in Figs. 3, 4 and 5, includes an engine (A), a housing (A1), a cover (A2), an engine fan (A3), a crankcase 2, plural elbows 3 and a curved metal tubular body 4 combined together.

The crankcase 2 is positioned at one side of the engine (A), having two insert holes 20, 21 in the upper side and a detecting hole 22 in the lower side. The elbows 3 respectively having both ends formed with threads 30 are respectively screwed with the insert hole 20, 21 and the detecting hole 22 of the crankcase 2. The metal tubular body 4 has one end provided with an adapter 40 and the other end provided with two adapters 41, 42 to be respectively assembled with the elbows 3. The curved metal tubular body 4 is installed in the housing (A1) at one side of the engine fan (A3), as shown

in Fig. 4.

In assembling, firstly, the elbows 3 are respectively screwed with the insert holes 20, 21 and the detecting hole 22 of the crankcase 2. Next, the metal tubular body 4 has its adapter 40 screwed with the threads 30 of the elbow 3 on the detecting hole 22, and its adapters 41, 42 respectively screwed with the threads 30 of the elbows 3 on the insert hole 20, 21 of the crankcase 2. Lastly, the cover (A2) is covered on the crankcase 2 to finish assembly of a cooling apparatus.

In using, when the engine (A) is started, the high-temperature lubricating machine oil in the crankcase 2 will flow into the curved metal tubular body 4 through the detecting hole 22 at the lower side of the crankcase 2. Then, the curved and long metal tubular body 4 together with the machine oil inside is cooled by the forceful wind of the engine fan (A3). After the temperature of the machine oil inside the metal tubular body 4 is properly dropped, the machine oil will spout into the crankcase 2 through the insert holes 20, 21, thus able to lower the temperature of the machine oil in the crankcase 2 and maintain its excellent lubrication effect.

As can be noted from the above description, this invention has the following advantages.

1. The cooling apparatus of the present invention is

installed near one side of the engine fan (A3) of a  
motorcycle; therefore the forceful wind of the engine fan  
(A3) can directly make the metal tubular body 4 cooled  
and heat dispersed to lower the temperature of the  
5 machine oil inside.

2. The cooling apparatus of the present invention  
can be manufactured and installed with ease, not  
increasing much burden to a motorcycle.

3. The cooling apparatus of the present invention  
10 is directly installed on the crankcase 2, unnecessary to  
have the crankcase 2 modified greatly and impossible to  
spoil the integral outer beauty of a motorcycle.

4. The cooling apparatus of the present invention  
is much lower than the conventional water-cooling  
15 apparatus in its assembly cost, giving the same effect of  
lowering the temperature of the machine oil in the  
crankcase 2.

While the preferred embodiment of the invention  
has been described above, it will be recognized and  
20 understood that various modifications may be made  
therein and the appended claims are intended to cover all  
such modifications that may fall within the spirit and  
scope of the invention.